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TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application Number	09/756,891
Filing Date	January 9, 2001
First Named Inventor	Mark Schavone
Art Unit	3644
Examiner Name	Stephen A. Holzen
Attorney Docket Number	286308-00001

Total Number of Pages in This Submission

ENCLOSURES *(Check all that apply)*

- [x] Fee Transmittal Form
  - [x] Fee Attached
- [ ] Amendment/Reply
  - [ ] After Final
  - [ ] Affidavits/declaration(s)
- [ ] Extension of Time Request
- [ ] Express Abandonment Request
- [ ] Information Disclosure Statement
- [ ] Certified Copy of Priority Document(s)
- [ ] Response to Missing Parts/ Incomplete Application
  - [ ] Response to Missing Parts under 37 CFR 1.52 or 1.53
- [ ] Drawing(s)
- [ ] Licensing-related Papers
- [ ] Petition
- [ ] Petition to Convert to a Provisional Application
- [ ] Power of Attorney, Revocation Change of Correspondence Address
- [ ] Terminal Disclaimer
- [ ] Request for Refund
- [ ] CD, Number of CD(s) _____
- [ ] After Allowance communication to Group
- [ ] Appeal Communication to Board of Appeals and Interferences
- [x] Appeal Communication to Group **(Appeal Notice, Brief, Reply Brief)**
- [ ] Proprietary Information
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Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	William F. Lang, IV Eckert Seamans Cherin & Mellott, LLC
Signature	William F. Lang IV
Date	March 26, 2004

CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.

Typed or printed name	William F. Lang, IV		
Signature	William F. Lang IV	Date	March 26, 2004

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FEE TRANSMITTAL for FY 2003

Patent fees are subject to annual revision.

☑ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 165.00

Complete if Known	
Application Number	09/756,891
Filing Date	January 9, 2001
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METHOD OF PAYMENT *(check all that apply)*

☑ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☐ Deposit Account:

Deposit Account Number: 02-2556

Deposit Account Name: Eckert Seamans

The Commissioner is authorized to: *(check all that apply)*

☐ Charge fee(s) indicated below ☑ Credit any overpayments

☑ Charge any additional fee(s) during the pendency of this application

☐ Charge fee(s) indicated below, **except for the filing fee** to the above-identified deposit account.

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1001	740	2001	370	Utility filing fee	
1002	330	2002	165	Design filing fee	
1003	510	2003	255	Plant filing fee	
1004	740	2004	370	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	

SUBTOTAL (1) ($)

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

		Extra Claims		Fee from below	Fee Paid
Total Claims		-20** =		X	=
Independent Claims		- 3** =		X	=
Multiple Dependent					=

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
1202	18	2202	9	Claims in excess of 20
1201	84	2201	42	Independent claims in excess of 3
1203	280	2203	140	Multiple dependent claim, if not paid
1204	84	2204	42	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($)

**or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for *ex parte* reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	400	2252	200	Extension for reply within second month	
1253	920	2253	460	Extension for reply within third month	
1254	1,440	2254	720	Extension for reply within fourth month	
1255	1,960	2255	980	Extension for reply within fifth month	
1401	320	2401	160	Notice of Appeal	
1402	320	2402	160	Filing a brief in support of an appeal	165.00
1403	280	2403	140	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,280	2453	640	Petition to revive - unintentional	
1501	1,280	2501	640	Utility issue fee (or reissue)	
1502	460	2502	230	Design issue fee	
1503	620	2503	310	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	740	2809	370	Filing a submission after final rejection (37 CFR 1.129(a))	
1810	740	2810	370	For each additional invention to be examined (37 CFR 1.129(b))	
1801	740	2801	370	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify) _____

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) ($) 165.00

SUBMITTED BY				(Complete *if applicable*)	
Name *(Print/Type)*	William F. Lang, IV	Registration No. *(Attorney/Agent)*	41,928	Telephone	412/566-2024
Signature	William F. Lang IV			Date	March 26, 2004

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Examiner: Stephen A. Holzen	:
	: **COMPRESSED GAS POWERED**
Group Art Unit: 3644	: **GUN SIMULATING THE RECOIL**
	: **OF A CONVENTIONAL**
In re application of:	: **FIREARM**
	:
MARK SCHAVONE	:
	:
Serial No.: 09/756,891	:
	:
Filed: January 9, 2001	: Attorney Docket No. 286308-00001

APPELLANT'S BRIEF ON APPEAL

March 26, 2004

Commissioner For Patents
MAIL STOP APPEAL BRIEF - PATENTS
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This is an Appeal Brief is being submitted in support of Appellant's Appeal from the Decision of the Examiner of Art Unit 3644 of October 28, 2003, finally rejecting Claims 1-8 in the application. Appellant filed its Notice of Appeal on January 28, 2004. This Appeal Brief is being filed by March 28, 2004 and is therefore timely filed.

I. Real Party In Interest

The real party in interest in this application is the New-Matics Licensing, LLC, 3050 Industrial Boulevard, Bethel Park, Pennsylvania 15102. The application was assigned by the inventor, Mark Schavone.

II. Related Appeals and Interferences:

There are no related appeals or interferences pending as of the date of this Appeal Brief known to Appellant or Appellant's legal representative which will directly affect, be directed affected by, or have a bearing on the Board's decision in the pending appeal.

III. Status of the Claims

Claims 1-8 are under final rejection, dated October 28, 2003.

Claims 9-32 are allowed.

See Appendix A, attached hereto for a copy of the current claims in this Appeal.

IV. Status of the Amendments

The claims appear as they were amended by Appellant's Amendment dated September 30, 2003.

V. Summary of the Invention

The present invention provides an air or gas-powered gun providing a recoil that is enhanced over that of a typical air or gas-powered gun, and is substantially that of a firearm or gun firing a powder propelled projectile. The level of recoil generated is therefore significantly more than would normally be provided through the equal and opposite reaction to the action of the discharge of a pellet, and will require the shooter to reacquire the target when looking through the sight after each shot, unlike a typical airgun. Furthermore, the level of recoil generated will be sufficient to get a shooter accustomed to the recoil of a powder-propelled firearm. This feature provides a gas-powered gun 10 that may be utilized as a training alternative to an actual firearm, that may be used safely in a wider variety of locations and training exercises than an actual firearm, and that is significantly less expensive to shoot than an actual firearm. These features are preferably provided by a bolt 38 and bolt driver that are structured to provide this recoil, and may further be provided by a trigger assembly 36 that is

structured to provide a cyclic rate of a conventional firearm firing a powder-propelled projectile.

The trigger assembly 36, illustrated in Figs. 2-8, and 22, includes a trigger 26 having a finger-engaging portion 48and a selector-engaging portion 50, a selector switch 46, a trigger bar 64, a sear trip 66, and a sear 74. The selector switch 46 will preferably be cylindrical, having three bearing surfaces 56 corresponding to safe, semi-automatic fire 58, and full automatic fire at a low cyclic rate 60, and a channel 62 corresponding to full automatic fire at a high cyclic rate. These surfaces and channel of the selector 46 bear against the selector engaging portion 50 of the trigger 26, permitting little or no trigger movement if safe is selected, and increasing trigger movement for semi-automatic fire, low cyclic rate full automatic fire, and high cyclic rate full automatic fire, respectively. The sear 74 is mounted on a sliding pivot 76, and is spring-biased towards a rearward position. The sear 74 has a forward end 78 for engaging the sear trip, and a rear end 80 for engaging the bolt 38. The bolt 38 preferably contains a floating mass 39, and reciprocates between a forward position and a rearward position. Although the bolt 38 is spring-biased towards its forward position, the bolt 38 will typically be held in its rearward position by the sear 74 except during firing. Specification, page 11, line 29 - page 12, line 22.

The valve assembly 40, illustrated in Figs. 2-8 and 22, includes a reciprocating housing 86 containing a stationary forward valve poppet 88, a sliding rear valve poppet 90, and a spring 92 between the front 88 and rear 92 valve poppets. The spring 92 pushes the rear valve poppet 90 rearward, causing the rear poppet 90 to bear against the housing 86, thereby closing the rear valve 90 and pushing the housing 86 rearward. Pushing the housing 86 rearward causes the housing 86 to bear against the front valve poppet 88, thereby closing the front valve 88. Specification, page 12, line 28 – page 13, line 9.

Before the trigger 26 is pulled, the trigger 26 is in its forwardmost position, the bolt 38 is held to the rear by its engagement with the sear 74, and the sear 74, although spring-biased rearward, is pushed towards its forwardmost position by the bolt 38. Pulling the trigger 26 causes the trigger bar 64 to move rearward, pivoting

the sear trip 66 upward. The upward movement of the sear trip 66 pushes upward on the forward end 78 of the sear 74, causing the rearward end 80 of the sear to move down. The bolt 38 is then free to travel forward, where the bolt 38 strikes the rear valve 90, thereby moving the rear valve 90 relative to the housing 86 and opening the rear valve 90. Air pressure between the O-ring 84 on the bolt face and the O-ring 106 on the rear of the valve housing causes the housing 86 to move forward, thereby opening the forward valve 88. Opening the forward valve 88 dispenses pressurized gas to a position directly behind the projectile, causing the projectile to exit the barrel 14. Opening the rear valve 90 supplies air pressure to the bolt face, thereby pushing the bolt 38 rearward. If semi-automatic fire is selected, the limited movement of the sear trip 66, combined with the rearward spring-bias on the sear 74, causes the sear 74 to move backwards on its pivot 76 to a position where the sear trip 66 can no longer apply upward pressure to the forward portion 78 of the sear 74. The rear portion 80 of the sear 74 therefore pivots upward. The bolt 38 will be propelled rearward to a point slightly behind the position wherein it engages the sear 74, with this rearward movement of the combined mass of the bolt 38 and bolt driver 160,162 (described below) providing the recoil. As the bolt 38 returns forward, the sear 74, which is no longer held in place by the sear trip 66, will engage the bolt 38, preventing further forward movement. From this position of the components, the trigger 26 must be released before it can be pulled to fire another shot. Specification, page 13, line 16 to page 17, line 26.

If full automatic fire at a slow cyclic rate is selected, the trigger 26 may be pulled slightly farther to the rear before it engages the selector 46, thereby causing the sear trip 66 to pivot slightly higher. Whereas the upper bearing surface 70 of the sear trip 66 pushes the sear up to initially release the bolt 38, here, the lower end bearing surface 72 of the sear trip pushes the sear 74 up sufficiently so that, when the bolt 38 catches the sear 74, there is only about $1/32^{nd}$ inch of engagement between the sear 74 and bolt 38. The floating mass bolt 38 is thereby momentarily held in its rearward position by the sear 74, which cams forward off the sear trip 66 as the forward motion of the bolt 38 pushes the sear 74 from its rearward position to its forward position.

Specification, page 17, line 27 – page 18, line 14.

If full automatic fire at a high cyclic rate is selected, the trigger 26 is allowed to travel to its maximum rearward position. The sear trip 66 is thereby pivoted upward to its maximum extent, causing the lower end bearing surface 72 of the sear trip to push the sear completely out of the way of the bolt 38. Therefore, as soon as the spring 158 behind the bolt driver 160,162 overcomes the rearward momentum of the bolt 38, the bolt 38 will simply return forward and again actuate the valve 40. Specification, page 18, lines 15-22

A compressed gas powered gun 10 of the present invention uses a recoil buffer system 158, illustrated in Figs. 18-21, for biasing the bolt 38 forward, and for providing a recoil for the shooter. A preferred buffer system 158 includes a floating mass bolt driver 162, and an air resistance bolt driver 160, with a spring 166 disposed therebetween. This assembly is located in a tube 172 within the air gun's shoulder stock 18, which is preferably a cylindrical tube. The buffer assembly 158 may be oriented so that either the air resistance bolt driver 160 or the floating mass bolt driver 162 is positioned directly behind the bolt 38, with the other bolt driver 160,162 preferably placed at the rear of the stock 18. The forward bolt driver 160,162 will thereby abut the rear of the bolt 38, pushing the bolt 38 forward. Specification, page 7, lines 19-27, page 14, line 28 – page 15, line 6.

If the air resistance bolt driver 160 is positioned directly behind the bolt 38, light recoil results. The air resistance bolt driver 160 has less mass than the floating mass bolt driver 162, resulting in less mass reciprocating back and forth. Additionally, the air resistance bolt driver 160 will trap air behind it as it reciprocates, thereby slowing travel of the reciprocating mass. Conversely, positioning the floating mass bolt driver 162 behind the bolt 38 results in heavier recoil, due to the increased reciprocating mass and the lack of the ability of the floating mass bolt driver 162 to trap air. The shooter may therefore select the desired level of recoil to correspond with the recoil of the conventional firearm the shooter wishes to simulate. Specification, page 7, line 28 – page 8, line 6.

VI. Issues Presented

1. Whether the Examiner erred in rejecting Claim 1 under 35 U.S.C. § 112, second paragraph, as being indefinite due the inclusion of the term "substantially."

2. Whether the Examiner erred in rejecting Claim 1 under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement.

3. Whether the Examiner erred in rejecting Claim 1 under 35 U.S.C. § 102(b) as being anticipated by both *Tippmann* disclosing impressed gun powdered marking gun and *Chiba* disclosing an airgun.

4. Whether Examiner erred in rejecting Claims 2-5 and 7-8 under 35 U.S.C. § 102(b) as being anticipated by *Tippmann*.

5. Whether the Examiner erred in rejecting Claim 6 under 35 U.S.C. § 103(a) as being obvious in light of *Tippmann* in view of ordinary skill in the art.

VII. Grouping of Claims

Claims 1-8 do not stand together or fall together. Claim 1 stands or falls on its own. Claims 2-4 stand together or fall together. Claims 5-8 each stand or fall on their own.

VIII. Argument

1. The Examiner erred in rejecting Claim 1 under 35 U.S.C. § 112, second paragraph, as being indefinite.

The Examiner rejected Claim 1 under 35 U.S.C. § 112, second paragraph, as being indefinite because the Examiner considered the term "substantially" to be a relative term rendering the claim indefinite. Appellant respectfully disagrees with this rejection.

"When a term of degree is presented in a claim, first a determination is to be made as to whether the specification provides some standard for measuring that degree. If it does not, a determination is made as to whether one of ordinary skill in the art, in view of the prior art and the status of the art, would be nevertheless reasonably apprised of the scope of the invention." MPEP § 2173.05(b). See also, *Andrew Corp. v. Gabriel Electronics, Inc.*, 847 F.2d 819, 6 U.S.P.Q.2d 2010, 2012-

2013 (Fed. Cir. 1988) (holding that a claim for "a conical horn-reflector antenna . . . which produces substantially equal E and H plane illumination patterns." was definite because one of ordinary skill in the art would know when the E and H plane illumination patterns were substantially equal.); *In re Mattison*, 509 F.2d 563, 184 U.S.P.Q. 484 (CCPA 1975) (holding that "being so selected and positioned on the aromatic ring to substantially increase the efficiency of the compound as a copper extractant from aqueous solutions having a pH of less than about 1.0" was definite because "the specification taught how the electron withdrawing substituents must be selected and positioned on the ring to provide the desired increase in extraction efficiency at the low pH ranges.").

Claim 1 recites that the recoil of the gas powered gun is enhanced to substantially the same level of recoil that is generated by a gun firing a powder propelled projectile. It is well understood by those skilled in the art that the recoil of a gun firing a powder propelled projectile will require the shooter to reacquire the target when looking through the sight after each shot. It is further understood by those skilled in the art of shooting that the level of recoil generated by guns firing powder propelled projectiles varies considerably, and may cause discomfort and a loss of accuracy for the shooter until the shooter becomes accustomed to the recoil. It is further well known to those skilled in the art of shooting that a typical airgun will generate substantially zero felt recoil for the shooter, and will not force the shooter to reacquire the sight after each shot.

The similarity of the recoil of an airgun of the present invention with that of a gun firing powder propelled projectiles, and the difference between both of these and a presently available airgun, is further illustrated by the Declarations of Mark Schavone and John McGovern, attached hereto as Appendices B and C, respectively, and the letter from Dennis McDonough to Mark Schavone dated December 26, 2001, attached hereto as Appendix D. All were submitted with the amendment dated September 30, 2003.

Therefore, Appellant respectfully submits that the recitations of Claim 1 are sufficiently definite so that their scope and limitations would be well understood by

one skilled in the art of shooting.

2. Claim 1 should be allowable under 35 U.S.C. §102 first paragraph.

The examiner rejected Claim 1 under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirements. The basis of this rejection is the use of a single means plus function claim within Claim 1.

The principal that a single means claim should be rejected under 35 U.S.C. § 112, first paragraph, comes from *Emory Hyatt*, 708 F.2d 712, 218 U.S.P.Q. 195 (Fed. Cir. 1983). In *Hyatt*, the United States Patents and Trade Mark Office Board of Appeals "acknowledged that the language of the final paragraph of § 112 is only permissive, and contains no express prohibition against single means claim." *Hyatt*, 708 F.2d 713. In holding that single means claims should be rejected under the first paragraph of § 112, the court reasoned that "the long recognized problem with a single means claim is that it covers every conceivable means for achieving the stated results, while the specification discloses at most only those means known to the inventor." Id. 714. However, a single means claim does not cover every conceivable means for achieving stated results, as recognized by *In re Donaldson Coe, Inc.*, 16 F.3d 1189, 29 U.S.P.Q.2d 1845 (Fed. Cir. 1994). "One construing means plus function language in a claim must look to the specification and interpret that language in light of the corresponding structure, material, or X described therein, and equivalents thereof, to the extent that the specification provides such disclosure." *Donaldson*, 16 F.3d 1193. Therefore, although *Donaldson* has no direct effect on the continued application of *Hyatt*, *Donaldson* does raise the question of whether the rationale applied in Hyatt remains applicable.

3. The Examiner erred in rejecting Claim 1 under 35 U.S. C.§ 102(b) as being anticipated by both Tippmann and Chiba.

The Examiner rejected Claim 1 under 35 U.S.C. § 102(b) as being anticipated by both *Tippmann* and *Chiba*. Appellant respectfully disagrees with this rejection for the following reasons.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." MPEP § 2131 (quoting *Verdegaal Brothers v. Union Oil Co. of California*, 814 F.2d

628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987)).

The Examiner correctly pointed out that every action has an equal and opposite reaction, and that therefore dispelling a projectile at a high velocity in one direction translates into a resulting movement of the gun in the other direction. However, both *Tippmann* and *Chiba* disclose airguns which dispel projectiles having significantly less energy than a projectile dispelled by a gun firing powder propelled projectiles. As explained above, the equal and opposite reaction of dispelling a projectile from the paintball gun of *Tippmann* or the airgun of *Chiba* will be insufficient to result in any felt recoil capable of being perceived by shooter. This recoil will not be anything near sufficient to get a shooter accustomed to the recoil of a conventional firearm, or to force a shooter to reacquire the target while looking through the sight after each shot. This recoil will further be insufficient to acquaint a shooter with the proper techniques for controlling the recoil of a full automatic weapon.

Claim 1 recites that the recoil of the gas powered gun in enhanced to substantially the same level of recoil that is generated by a gun firing a powder propelled projectile. Enhancing the recoil to this degree requires more than the mere equal and opposite reaction to discharging a projectile. In a preferred embodiment of the present invention, it is accomplished by the reciprocation of the weighted bolt plus the bolt driver, in combination with sufficient gas pressure to drive the bolt and bolt driver rearward to not only cycle the air gun, but also to create the recoil. In another preferred embodiment, the level of recoil can be modified by switching between a heavier floating mass bolt driver and a lighter air resistance bold driver. There is no teaching or suggestion whatsoever in either *Tippmann* or *Chiba* to enhance the recoil generated by either. In the case of *Tippmann*, recoil is generated only by the incidental equal and opposite reaction to the discharge of the projectile and the likewise incidental result of the reciprocating bolt. In the case of *Chiba*, recoil is generated only by the incidental equal and opposite reaction to discharging the projectile.

As an example, Mark Schavone has calculated the recoil of one preferred

embodiment of the airgun of the present invention to be about four to five foot-pounds when set up for light recoil, and nine foot-pounds when set up for heavy recoil. By comparison, the recoil of a conventional M16 rifle is five to seven foot-pounds with some of the better muzzle brakes that are presently available, and thirteen foot-pounds without a muzzle brakes. Other embodiments of the airgun can be set up for other levels of felt recoil. For example, if compromising the cyclic rate and gas consumption rate is acceptable for the desired application, as much as 23 foot-pounds of recoil can be generated, which is substantially equivalent to the 25 foot-pounds of recoil generated by a typical 12-gauge shotgun. As these examples illustrate, the recoil of the airgun of the present invention is therefore at substantially the same level of recoil as a conventional firearm because it is sufficiently close to the recoil of a conventional firearm to get a shooter accustomed to the recoil of a conventional firearm, and to force the shooter to reacquire the target while looking through the sights between shots.

4. The Examiner Erred in Rejecting Claims 2-5 and 7-8 Under 35 U.S.C. § 102.

The Examiner rejected Claims 2-5 and 7-8 under 35 U.S.C. § 102(b) as being anticipated by *Tippmann*. Appellant respectfully disagrees with this rejection as explained below.

Claim 2 is dependent from Claim 1, and therefore includes the limitation that a gas powered gun comprises a means for simulating a recoil that is enhanced to substantially the level of the recoil generated by a gun firing a powder propelled projectile. As explained above, any recoil generated by Tippmann is the incidental result of Newton's Third Law, and the likewise incidental result of the reciprocating bolt mass. There is no teaching or suggestion within Tippmann to enhance the recoil of a gas powered gun to the substantially heavier level of recoil generated by a gun firing a powder propelled projectile. Furthermore, Tippmann will not generate a sufficient recoil to get a shooter accustomed to the recoil of a conventional firearm, or to force the shooter to reacquire the target while looking through the sights between shots.

Claim 2 further recites that the means for simulating a recoil that is enhanced to substantially the same level of recoil that is generated by a gun firing a powder propelled projectile includes a bolt. While Tippmann discloses a bolt, Tippmann fails to disclose a bolt having the appropriate structure to function as a portion of a system for enhancing recoil. A bolt of the present invention may, for example, include a floating mass to enhance its recoil generation properties.

Furthermore, Claim 5 recites that the spring, forward valve, and rear valve form a captive assembly. A captive assembly provides the advantage of ease of repair and replacement, and is neither taught nor suggested by Tippmann.

Claims 7 and 8 are both directed towards a buffer assembly. Claim 7 recites that the buffer assembly biases the bolt towards its forward position, and provides a recoil for the shooter. Claim 8 further recites that the buffer assembly includes a spring-biased air-resistance bolt driver. Use of both the bolt and the buffer assembly to provide recoil to a shooter permits the level of recoil to be varied to simulate the many different levels of recoil generated by a wide variety of powder-propelled firearms. For example, by using the air resistance bolt driver recited in Claim 8, the recoil of a small caliber firearm may be simulated.

Therefore, *Tippmann* fails to teach each and every element recited in Claims 2-5 and 7-8.

5. The Examiner Erred in Rejecting Claim 6 Under 35 U.S.C. § 103.

The Examiner rejected Claim 6 under 35 U.S.C. § 103(a) as being obvious in light of *Tippmann* in view of ordinary skill in the art. Appellant respectfully disagrees with this rejection.

As explained on page 2, of the application, it is important that the present invention simulate both the recoil and the cyclic rate of a full automatic firearm to be useful to train a shooter to use a full automatic firearm. As explained on page 18, lines 8-13, the floating mass within the bolt provides a means of varying the cyclic rate of full automatic fire by slowing forward bolt travel sufficiently so that the sear may momentarily catch and delay forward movement of the bolt. Furthermore, page 7, line 28 to page 8, line 6, of the application explain that it is the reciprocating mass

that supplies a recoil to a shooter. The reciprocating mass includes both the reciprocating bolt with the mass reciprocating therein, and the reciprocating bolt driver.

IX. Conclusion

For the above reasons, Appellant respectfully submits that the Examiner erred in rejecting Claims 1-8, and requests reversal of the rejection of these claims. In view of the nature of the issues on appeal, Appellant submits that an oral hearing would not meaningfully advance the appeal, and therefore an oral hearing is not requested.

Respectfully submitted,

William F. Lang IV

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1. A gas-powered gun, comprising means for simulating a recoil that is enhanced to substantially the same level of recoil that is generated by a gun firing a powder-propelled projectile.

2. The gas-powered gun according to claim 1, wherein said means for simulating a recoil that is enhanced to substantially the same level of recoil that is generated by a gun firing a powder-propelled projectile comprise:

a bolt reciprocating between a forward position and a rearward position, said bolt being biased towards its forward position, said bolt having a gas-receiving surface; and

a valve assembly dimensioned and configured to discharge compressed gas both forward into a firing chamber and rearward onto said bolt face when said bolt reaches its forward position.

3. The gas-powered gun according to claim 2, wherein said valve assembly comprises:

a stationary forward valve;

a housing reciprocating between a forward position wherein said forward valve is open, and a rearward position wherein said forward valve is closed, said housing being biased towards its rearward position; and

a rear valve reciprocating between a forward position wherein said rear valve is open, and a rearward position wherein said rear valve is closed, said rear valve being biased towards its rearward position.

4. The gas-powered gun according to claim 3, further comprising a spring dimensioned and configured to bias said housing and said rear valve towards their rear positions.

5. The gas-powered gun according to claim 4, wherein said spring, forward valve, and rear valve form a captive assembly.

6. The gas-powered gun according to claim 2, wherein said bolt includes a floating mass.

7. The gas-powered gun according to claim 2, further comprising a buffer assembly dimensioned and configured to bias said bolt towards its forward position,

and to provide a recoil for a shooter.

8. The gas-powered gun according to claim 7, wherein said buffer assembly comprises a spring-biased air resistance bolt driver.

9. A gas-powered gun, comprising:

a bolt reciprocating between a forward position and a rearward position, said bolt being biased towards its forward position, said bolt having a gas-receiving surface;

a buffer assembly dimensioned and configured to bias said bolt towards its forward position, and to provide a recoil for a shooter, said buffer assembly comprising a spring-biased air resistance bolt driver; said air resistance bolt driver comprising two detachable components, dimensioned and configured for use within buffer tubes having at least two different lengths;

a valve assembly dimensioned and configured to discharge compressed gas both forward into a firing chamber and rearward onto said bolt face when said bolt reaches its forward position; and

the gas-powered gun being structured to simulate a recoil approximating a recoil generated by a gun firing a powder-propelled projectile.

10. A gas-powered gun, comprising:

a bolt reciprocating between a forward position and a rearward position, said bolt being biased towards its forward position, said bolt having a gas-receiving surface;

a buffer assembly dimensioned and configured to bias said bolt towards its forward position, and to provide a recoil for a shooter, said buffer assembly comprising a spring-biased air resistance bolt driver; said buffer assembly comprising a spring-biased floating mass bolt driver;

a valve assembly dimensioned and configured to discharge compressed gas both forward into a firing chamber and rearward onto said bolt face when said bolt reaches its forward position; and

the gas-powered gun being structured to simulate a recoil approximating a recoil generated by a gun firing a powder-propelled projectile.

Appendix A

11. A gas-powered gun, comprising:

a bolt reciprocating between a forward position and a rearward position, said bolt being biased towards its forward position, said bolt having a gas-receiving surface;

a buffer assembly dimensioned and configured to bias said bolt towards its forward position, and to provide a recoil for a shooter, said buffer assembly comprising a spring-biased air resistance bolt driver said buffer assembly comprising;

an air resistance bolt driver;

a floating mass bolt driver; and

a spring disposed therebetween;

a valve assembly dimensioned and configured to discharge compressed gas both forward into a firing chamber and rearward onto said bolt face when said bolt reaches its forward position; and

the gas-powered gun being structured to simulate a recoil approximating a recoil generated by a gun firing a powder-propelled projectile.

12. A gas-powered gun comprising:

means for simulating a recoil approximating a recoil generated by a gun firing a powder-propelled projectile; and

a trigger assembly including:

a trigger having a finger-engaging portion and a selector-engaging portion;

a selector, comprising:

a first surface dimensioned and configured to abut said selector-engaging portion of said trigger and to resist movement of said trigger;

a second surface dimensioned and configured to abut said selector-engaging portion of said trigger and to permit a first distance of movement of said trigger;

a third surface dimensioned and configured to abut said selector-engaging portion of said trigger and to permit a second distance of movement

of said trigger, said second distance of movement being greater than said first distance of movement;

a channel dimensioned and configured to permit a third distance of movement of said trigger, said third distance of movement being greater than said second distance of movement; and

said selector is dimensioned and configured to permit said first surface, second surface, third surface, and channel to be selectively positioned to engage said trigger's selector-engaging portion.

13. The gas-powered gun according to claim 12, wherein said first surface corresponds to safe, said second surface corresponds to semiautomatic operation, said third surface corresponds to full automatic operation at a first cyclic rate, and said channel corresponds to full automatic operation at a second cyclic rate, said second cyclic rate being faster than said first cyclic rate.

14. The gas-powered gun according to claim 12, further comprising a sear trip operatively associated with said trigger.

15. The gas-powered gun according to claim 14, further comprising a sear, said sear having a first end dimensioned and configured to selectively engage and release a bolt, and a second end dimensioned and configured to engage said sear trip, said sear being spring-biased into engagement with said bolt, said sear being secured to a receiver by a sliding pivot.

16. The gas-powered gun according to claim 15, wherein said sear trip further comprises an end having an upper step and a lower step, with said upper step and lower step each having a radiused corner.

17. A gas-powered gun comprising:

means for simulating a recoil approximating a recoil generated by a gun firing a powder-propelled projectile; and

a magazine assembly, comprising:

a magazine having a plurality of chambers, each of said chambers being dimensioned and configured to be axially aligned with a barrel, and to receive a projectile therewithin;

means for automatically indexing said magazine upon the cycling of a bolt; and

means for automatically aligning one of said chambers with said barrel upon completion of indexing.

18. The gas-powered gun according to claim 17, wherein said magazine is a cylinder.

19. The gas-powered gun according to claim 18, further comprising a magazine tube dimensioned and configured to align with one of said magazine's chambers and to contain projectiles, said magazine tube containing a spring-biased follower.

20. The gas-powered gun according to claim 18, wherein said means for automatically indexing said magazine upon the cycling of a bolt comprise:

a pawl carrier reciprocating between a first side position and a second side position; and

a pawl dimensioned and configured to engage one of said chambers when said pawl carrier is in said first side position, and one of said chambers when said pawl carrier is in said second side position, said pawl being biased towards said magazine.

21. The gas-powered gun according to claim 20, wherein said pawl comprises:

a pusher surface dimensioned and configured to index said magazine when said pawl carrier moves from said first side position to said second side position; and

a ramped surface dimensioned and configured to permit said pawl to exit one of said chambers when said pawl carrier moves from said second side position to said first side position, and to engage another of said chambers when said pawl carrier reaches said first side position.

22. The gas-powered gun according to claim 20, further comprising an operating rod secured to a bolt, said bolt reciprocating between a forward position and a rear position, said operating rod being dimensioned and configured to cyclic said

pawl carrier upon the cycling of said bolt.

23. The gas-powered gun according to claim 22, wherein said operating rod is dimensioned and configured to move said pawl carrier from said second position to said first position when said bolt moves towards its forward position, and to move said pawl carrier from said first position to said second position when said bolt moves towards its rear position.

24. The gas-powered gun according to claim 23, wherein:

said operating rod comprises a slot, said slot being angled relative to a direction of travel of said bolt; and

said pawl carrier includes a pin dimensioned and configured to engage said slot in said operating rod.

25. A gas-powered gun, comprising:

a magazine assembly, comprising:

a magazine having a plurality of chambers, each of said chambers being dimensioned and configured to be axially aligned with a barrel, and to receive a projectile therewithin, said magazine including an exterior surface having a plurality of flutes, with each of said flutes corresponding to one of said chambers;

means for automatically indexing said magazine upon the cycling of a bolt; and

means for automatically aligning one of said chambers with said barrel upon completion of indexing; including a spring-biased bearing dimensioned and configured to engage one of said plurality of flutes; and

the gas-powered gun being structured to simulate a recoil approximating a recoil generated by a gun firing a powder-propelled projectile.

26. The gas-powered gun according to claim 25, wherein said bearing has a radius larger than a radius of said flutes.

27. The gas-powered gun according to claim 17, wherein said magazine is an elongated sliding member, said sliding member having a plurality of indexing chambers.

28. The gas-powered gun according to claim 27, wherein said means for

automatically indexing said magazine upon the cycling of a bolt comprise:

a pawl carrier reciprocating between a first side position and a second side position; and

a pawl dimensioned and configured to engage one of said indexing chambers when said pawl carrier is in said first side position, and one of said indexing chambers when said pawl carrier is in said second side position, said pawl being biased towards said magazine.

29. The gas-powered gun according to claim 28, wherein said pawl comprises:

a pusher surface dimensioned and configured to index said magazine when said pawl carrier moves from said first side position to said second side position; and

a ramped surface dimensioned and configured to permit said pawl to exit one of said indexing chambers when said pawl carrier moves from said second side position to said first side position, and to engage another of said indexing chambers when said pawl carrier reaches said first side position.

30. The gas-powered gun according to claim 29, further comprising an operating rod secured to a bolt, said bolt reciprocating between a forward position and a rear position, said operating rod being dimensioned and configured to cyclic said pawl carrier upon the cycling of said bolt.

31. The gas-powered gun according to claim 30, wherein said operating rod is dimensioned and configured to move said pawl carrier from said second position to said first position when said bolt moves towards its forward position, and to move said pawl carrier from said first position to said second position when said bolt moves towards its rear position.

32. The gas-powered gun according to claim 31, wherein:

said operating rod comprises a slot, said slot being angled relative to a direction of travel of said bolt; and

said pawl carrier includes a pin dimensioned and configured to engage said slot in said operating rod.

Appendix A

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit 3644	:
Examiner Stephen A. Holzen	: **COMPRESSED GAS POWERED GUN SIMULATING THE RECOIL OF A CONVENTIONAL**
In re application of	: **FIREARM**
MARK SCHAVONE	:
Serial No. 09/756,891	:
Filing Date January 9, 2001	: **(Attorney Docket No. 286308-00001)**

DECLARATION OF MARK SCHAVONE UNDER 37 CFR § 1.132

I, MARK SCHAVONE, hereby state the following:

1. I have ten years experience as a job shop machinist.

2. In addition to #1 above, I have sixteen years experience as a tool maker, tool room machinist, mold maker, and programmer of computer numerical controlled machine tools.

3. In addition to #1 and #2 above, I have three years experience as a mold and tool designer.

4. I have actively performed gunsmithing as a hobby for at least 20 years.

5. For at least three years in addition to #4, I have performed reactivation of registered DEWAT guns for Class II federal license holders, barrel manufacture, and designed and made my own machines and tooling for gun barrel manufacture.

6. I have been an active recreational shooter of shotgun, rifles, and handguns for 36 years.

7. Based on the above experience, I am thoroughly familiar with the design, manufacture, shooting, and handling characteristics of various firearms and air guns, including the felt recoil generated by each.

8. I have fired approximately 1.5 million rounds of ammunition through prototypes of the air gun disclosed and claimed in my above-referenced patent application.

9. I found the felt recoil to have substantially the same level of recoil as that generated by a powder propelled firearm, requiring me to reacquire the target in the sights after each shot. I also found the recoil to be sufficient to get a shooter accustomed to the recoil of a conventional, powder-propelled firearm.

10. A typical air gun generating recoil only through Newton's Third Law and/or through incidental movement of parts during cycling will generate substantially zero felt recoil, and will not force a shooter to reacquire the sights after each shot.

11. I have calculated the recoil of one preferred embodiment of my air gun to be about four to five ft.-lbs. when set up for light recoil, and about nine ft.-lbs. when set up for heavy recoil. Other embodiments could be set up for other levels of recoil. For example, up to 23 ft.-lbs. of recoil could be generated if compromising the cyclic rate and gas consumption rate is acceptable for the desired application.

12. I have calculated the recoil of a conventional M16 rifle to be about 13 ft.-lbs. without a muzzle break, and as low as five to seven ft.-lbs. with a muzzle brake, depending on the design of the muzzle brake. A typical M16 rifle as issued to the U.S. military is equipped with a flash suppressor that doubles as a muzzle brake.

13. The following experts in the field of firearms have fired my air gun, experienced the recoil, and recognized that it produces substantially the same level of recoil as a conventional firearm instead of the recoil of an air gun: Patrick Squire, former Vice-President of Colt, Interarms, and Springfield Armory, former Instructor of Small Arms at West Point, and former Airborne Ranger Second Lieutenant in combat in Vietnam; Dennis M. McDonough, Deputy Chief of Police, Township of South Park, and also a traveling police firearms instructor who teaches at police academies throughout the United States, a letter from whom is attached hereto as Exhibit A; Jess I. Galan, Forensics Firearms Examiner for the Miami-Dade Police and publisher of Airgun Digest; and others.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. § 1001 and that such willful false statements may jeopardize the validity of the above-referenced patent application or any patent issued thereon.

Respectfully submitted,

Mark Schavone

09/30/03
Date

Appendix C

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit 3644	:
	: **COMPRESSED GAS POWERED**
Examiner Stephen A. Holzen	: **GUN SIMULATING THE RECOIL**
	: **OF A CONVENTIONAL**
In re application of	: **FIREARM**
	:
MARK SCHAVONE	:
	:
Serial No. 09/756,891	:
	:
Filing Date January 9, 2001	: **(Attorney Docket No. 286308-00001)**

DECLARATION OF JOHN T. MCGOVERN UNDER 37 CFR § 1.132

I, JOHN T. MCGOVERN, hereby state the following:

1. I obtained a Bachelor of Science in Mechanical Engineering Technology from Pennsylvania State University in December of 1996.

2. I am presently a Section Engineering Manager at FN Manufacturing, Inc., a manufacturer of semi-automatic rifles and handguns, and automatic weapons, and also the largest manufacturer of M16 rifles for the U.S. military. I have held this position for the past year.

3. Prior to becoming a Section Engineering Manager, I was a Senior Engineer at FN Manufacturing Inc. for one year.

4. My primary responsibilities at FN Manufacturing have been designing pistols, automatic rifles, and pneumatic weapons.

5. Prior to joining FN, I worked as a Senior Engineer at General Dynamics and Olin Corp., where I was involved in the design of firearms ammunition.

6. I have been named as an inventor on the following U.S. patents in the field of firearms ammunition: 5,183,961; 5,277,096; 5,277,120; 5,277,121; 5,635,660; 5,640,054; and 6,085,660.

7. I have been an active recreational shooter of shotgun, rifles, and handguns for 36 years.

8. Based on the above experience, I am thoroughly familiar with the design, manufacture, shooting, and handling characteristics of various firearms and air guns, including the felt recoil generated by each.

9. I have fired about 100 rounds of ammunition through the air gun invented by Mark Schavone, disclosed and claimed in the above-referenced patent application.

10. I found the felt recoil to be a realistic approximation of that generated by a powder propelled firearm, requiring me to reacquire the target in the sights after each shot.

11. A typical air gun generating recoil only through Newton's Third Law and/or through incidental movement of parts during cycling will generate substantially zero felt recoil, and will not force a shooter to reacquire the sights after each shot.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. § 1001 and that such willful false statements may jeopardize the validity of the above-referenced patent application or any patent issued thereon.

Respectfully submitted,

John T. McGovern

9-26-03
Date

TOWNSHIP OF SOUTH PARK
Department of Police

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CHIEF OF POLICE
Joseph F. Ferrelli

BOARD OF SUPERVISORS
George A. Smith
Walter C. Sackinsky
Paul G. Walker, Jr.

Mr. Mark D. Schavone
CTO New-Matics, Inc.
5240 Sherwood Drive
Pittsburgh, PA 15236

December 26, 2001

Dear Mr. Schavone;

I want to take this opportunity to personally thank you for affording Sergeant David Starzynski and myself an opportunity to test fire your M+15P air rifle.

I found the experience to be an eye opening one. The overall feel and accuracy of the air rifle was outstanding. Your air rifle is as close in feel, action, recoil and accuracy as our department issue AR-15 rifles.

As an administrator for a police department, firearms training and ammunitions are a *large ticket* item in our law enforcement budgets. The potential is there were we will be able to practice long rifle techniques and tactics more often by utilizing the M+15P air rifle. It is imperative that we have the ability to provide our officers quality, realistic firearm scenarios at a cost effective price without sacrificing State of Pennsylvania certification standards.

The South Park Township Police Department is anxiously awaiting the further development of your product. We are willing to be a part of any testing protocol or program that you would like us to participate in.

Thank you again for your vision in providing law enforcement with quality firearms training.

Sincerely,

Dennis M. McDonough
Deputy Chief of Police
Township of South Park Police Department